- $\mu = \lambda = 1$, no recombination.
- Individual structure: $\vec{a} = (\vec{x}, \sigma) \in I\!R^n \times I\!R_+$.
- Mutation: 1/5-success rule

$$\tilde{\sigma} \;:=\; \mathbf{mu}_\sigma(\sigma) = \begin{cases} \sigma / \sqrt[n]{c} & , \quad \text{if } p > 1/5 \\ \sigma \cdot \sqrt[n]{c} & , \quad \text{if } p < 1/5 \\ \sigma & , \quad \text{if } p = 1/5 \end{cases}$$

$$\tilde{x} \;:=\; \mathbf{mu}_x(\vec{x}) = (x_1 + z_1, \ldots, x_n + z_n) \;.$$

  - p denotes the measured relative frequency of successful mutations.
  - $c = 0.817$ proposed by Schwefel.
  - $z_i \sim \mathrm{N}_i(0, \tilde{\sigma}^2)$.
- Selection:

$$\mathbf{sel}_1^2(\{\vec{a}, \tilde{\vec{a}}\}) = \begin{cases} \{\tilde{\vec{a}}\} & , \quad \text{if } f(\tilde{\vec{x}}) \leq f(\vec{x}) \\ \{\vec{a}\} & , \quad \text{otherwise} \quad . \end{cases}$$

- Generation transition:

$$opt_{(1+1)-ES}(\{\vec{a}\}) = \mathbf{sel}_1^2(\{\mathbf{mut}(\vec{a})\} \sqcup \{\vec{a}\})$$